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U.S. DEPARTMENT OF AGRICULTURE

## ROCKY MOUNTAIN FOREST AND RANGE EXPERIMENT STATION

## Storage Does Not Affect Crude Protein Content of Forage Samples

Floyd W. Pond and Henry A. Pearson<sup>1</sup>

*Storage of forage samples for 15 months prior to proximate analysis had no apparent effect on crude protein. (KEY WORDS: Plant proteins, forage plants, range management)*

Forages are frequently collected from rangelands and stored in containers for proximate analysis at some future date. The effect of prolonged storage on chemical composition, especially crude protein, has frequently been discussed but has not been reported. Since crude protein is of major importance in assessing nutritive values of range forages, effect of storage should be substantiated.

### Methods

In early 1963, 34 forage samples were collected on the Sierra Ancha Experimental Forest near Roosevelt Lake in central Arizona. These samples were oven-dried at 70° C. for 24 hours, ground, and placed in screw-cap jars. These jars were stored on shelves for a short time before a portion of each sample was analyzed for crude protein. The remainder of each sample was retained in the sealed jars under normal room temperature and light conditions until analyzed for crude protein by a differ-

ent laboratory in September 1964. Although separate laboratories made the two analyses, both followed AOAC<sup>2</sup> methods. Dietz and Curnow<sup>3</sup> showed that most analyses from different laboratories were comparable.

### Results and Discussion

Average crude protein content of the 34 samples was 7.23 percent when analyzed soon after collection and 7.41 percent after prolonged storage. The largest difference between paired samples was 2.5 percent; 19 of the 34 pairs were within 0.2 percent of each other. After prolonged storage, 27 of 34 times the analysis of crude protein content was equal to or greater than results from earlier analyses. Standard error of difference was only 0.0896 and "t" was 1.965. Since this analysis showed no significant change in crude protein content between the two analyses, a 15-month delay in analyzing for crude protein should not significantly affect the results.

<sup>1</sup>Range Scientists, respectively, located at Flagstaff, in cooperation with Northern Arizona University; central headquarters are maintained at Fort Collins, in cooperation with Colorado State University. Pearson is now located at Southern Forest Experiment Station, Pineville, Louisiana 71360.

<sup>2</sup>Association of Official Agricultural Chemists (AOAC). Official methods of analysis. Ed. 9, 832 p. Washington, D. C. 1960.

<sup>3</sup>Dietz, Donald R., and Curnow, Richard D. How reliable is a forage chemical analysis? J. Range Manage. 19: 374-376. 1966.

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